

REMARKS

Applicant respectfully requests reconsideration of this application as amended.

Office Action Rejections Summary

Claims 1, 6-13, 18, 23-27, 29, 31-32, 34, 37, and 40-44 have been rejected under 35 U.S.C. §112, second paragraph.

Claims 18-25 have been rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,226,322 of Mukherjee ("Mukherjee").

Claims 1-9 and 44-45 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mukherjee.

Claims 10 and 26 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mukherjee as applied to claim 25 above.

Claims 11-17, and 27-30 have been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 31-43 have been allowed.

Therefore, the following remarks are directed to the rejected claims.

Status of Claims

Claims 1-49 are pending in the application. Claims 1, 6-13, 18-19, 21, 23-34, 37, and 40-44 have been amended to more properly define a preexisting claim limitation. The amended claims are supported by the specification. No new matter has been added. No claims have been canceled.

Claims 46-49 have been added. It is submitted that no new matter has been added. Support for new claims 46-49 may be found, for example, in the specification in paragraph 0037 that states:

Although FIG. 4 shows filtering and amplification functions combined as discrete filter/amplifying elements (402 and 404), the scope of the present invention includes loop extenders with separate filter and amplifying elements.

Claim Rejections

Claims 1, 6-13, 18, 23-27, 29, 31-32, 34, 37, and 40-44 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is submitted that the as amended claims are definite and withdrawal of the rejection is respectfully requested.

Claims 1-10 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mukherjee. It is submitted that the claims are patentable over the cited reference.

Claim 1 recites:

A system for improving transmission of digital subscriber line (DSL) signals over a local loop, the system comprising:

a loop extender capacitively coupled to the local loop, the loop extender comprising:

a plurality of upstream complex impedances coupled in parallel;
a plurality of downstream complex impedances coupled in parallel;
a first upstream filter and amplifying element coupled to the plurality of upstream complex impedances via a first switch; and
a first downstream filter and amplifying element coupled to the plurality of downstream complex impedances via a second switch.

(emphasis added)

The Office Action states, in part:

Regarding claim 1, Mukherjee further teaches a system for improving transmission of DSL signals over a local loop, the system comprising:

a loop extender capacitively coupled to the local loop using capacitor C89 [Fig. 8];

(Office Action, 5/1/06, pp. 4-7)

Applicant respectfully disagrees with the Office Action's assertions and characterization of Mukherjee. It is submitted that Mukherjee does not teach a loop extender in the DSL modem system of its purported invention. The capacitor C89 of Figure 8 of Mukherjee cited to by the Office Action is situated in a receive side analog front end component located in a DSL modem of a remote system (e.g., home or office). (See Brief Description of the Drawings for Figure 8 at col. 4, lines 42-46). Furthermore, as can clearly be seen from an inspection of the system Figure 1 of Mukherjee, there are no loop extenders in the DSL system taught by Mukherjee on the TWP between the central office DSL modem 8 and the remote DSL modems (not marked with a reference number) indicated by the dashed boxes next to the remote systems R. Figure 1 of Mukherjee is reproduced below for the Examiner's convenience.

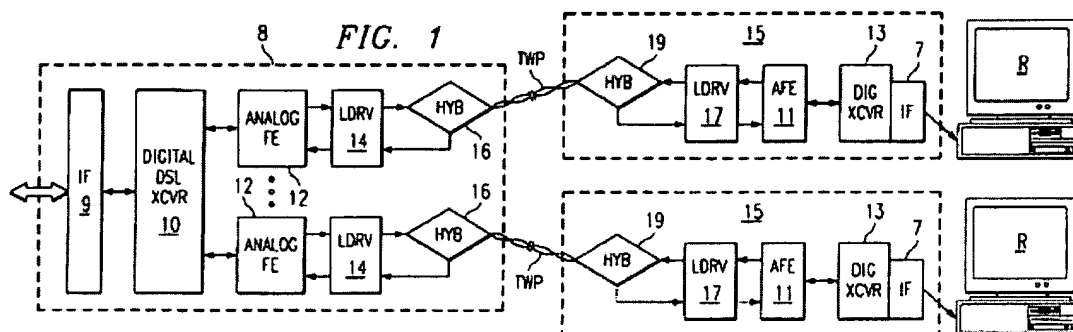


Figure 1 of Mukherjee

Moreover, Mukherjee teaches away from the use of loop extenders in the DSL modem system of its purported invention as a solution to the problems facing Mukherjee. As the Examiner has noted, the background section of Mukherjee discusses that in some prior art DSL systems, the operating range is limited beyond which signal repeaters are required. However, Mukherjee explicitly teaches the use of integrated circuits and techniques within the central office and remote DSL modems as solutions for addressing such problems (see

Brief Summary of the Invention Section of Mukherjee), rather than the use of repeater solutions. Therefore, for at least the reasons noted above, it is submitted that Mukherjee fails to teach or suggest the limitations appearing in claim 1 and that claim 1 is patentable over Mukherjee.

It is submitted that claims 2-10 are also patentable over Mukherjee because claims 2-9 depend from and, therefore, include the limitations of claim 1.

Claims 18-25 have been rejected under 35 U.S.C. §102(e) as being anticipated by Mukherjee. Claim 26 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mukherjee. It is submitted that claims 18-26 are patentable over Mukherjee.

Claim 18 recites:

A method of improving transmission of digital subscriber line (DSL) signals over a local loop, comprising:

configuring a loop extender with

a plurality of upstream complex impedances coupled in parallel;
a plurality of downstream complex impedances coupled in parallel;
a plurality of upstream filter and amplifying elements coupled in parallel and coupled in series with the plurality of upstream complex impedances; and

a plurality of downstream filter and amplifying elements coupled in parallel and coupled in series with the plurality of downstream complex impedances

(emphasis added)

In particular, the Office Action states, in part:

Regarding claim 18, Mukherjee teaches a method for improving transmission of DSL signals over a local loop shown in Figs. 1-4 [col. 10, lines 41-63], comprising the steps of:

configuring a loop extender [col. 2, lines 10-28] with:

a plurality of upstream complex impedances comprising elements, capacitor C89, resistors RIX, RI1, RI2 and R13 wherein selecting a combination of switches S12', S23' and S3X' yields a plurality of complex impedances coupled in parallel [Figs. 1, 4, 8; col. 18, line 13 to col. 19, line 37; col. 17, line 18 to col. 18, line 12];

(Office Action, 5/1/06, page 3)(emphasis added)

Applicant respectfully disagrees with the Office Actions assertions and characterization of the cited reference. It is submitted that Mukherjee does not disclose configuring a loop extender in the DSL modem system of its purported invention. In particular, the column 2, line 10-28 passage of Mukherjee cited to by the Office Action is a background discussion of prior art systems and not a description of the system of Mukherjee. The capacitor C89, resistors RIX, RI1, RI2 and R13 and switches S12', S23' and S3X of Figure 8 of Mukherjee cited to by the Office Action are situated in a receive side analog front end component located in a DSL modem of a remote system (e.g., home or office) and not in a loop extender. (See Brief Description of the Drawings for Figure 8 at col. 4, lines 42-46). Furthermore, as can clearly be seen from an inspection of the system Figure 1 of Mukherjee, there are no loop extenders in the DSL system disclosed by Mukherjee on the TWP between the central office DSL modem 8 and the remote DSL modems (not marked with a reference number) indicated by the dashed boxes next to the remote systems R. Nothing in Mukherjee discloses or teaches the configuring of a loop extender. Therefore, it is submitted that claim 18 is patentable over Mukherjee.

It is submitted that claims 19-26 are also patentable over Mukherjee because claims 19-26 depend from and, therefore, include the limitations of claim 18.

Claims 44-45 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mukherjee. It is submitted that claims 44-45 are patentable over Mukherjee.

The Office Action states, in part:

Regarding claim 44, Mukherjee teaches a method for improving transmission of DSL signals over a local loop, comprising the steps of:
transmitting control signals and DSL signals over the local loop
[Fig. 1; col. 3, line 61 to col. 4, line 12; col. 5, line 12 to col. 6, line 9; col. 8, lines 18-65];

providing DSL signal amplification via selectable line termination and equalization (SLTE) DSL amplification circuitry coupled to the local loop [Figs. 2-7; col. 23, line 18 to col. 24, line 35; Fig. 12; col. 26, lines 33-58];

receiving the control signals via a control unit (digital transceiver 13) coupled to the local loop and processing the control signals [Figs. 1-3; col. 9, lines 26-67];

selecting SLTE DSL amplification circuitry switch states in accordance with the processed control signals; selecting SLTE DSL amplification circuitry switch states in accordance with the processed sampled DSL signals to improve SLTE DSL amplification circuitry performance; uncoupling SLTE DSL amplification circuitry [Fig. 5] from the local loop in accordance with the processed control signals [Figs. 5-6; col. 11, line 19 to col. 12, line 45; col. 23, lines 18-39].

Mukherjee does not teach expressly sampling digital signals within DSL amplification circuitry.

Since Mukherjee teaches the system where sampling is required [Figs. 4, 5, 10, 16; col. 12, lines 23-67; col. 29, lines 13-59], it would have been obvious to a person of ordinary skill in the art to do sampling of SDL signals within the SLTE DSL amplification circuit and processing the sampled DSL signals in order to reduce the memory requirement for processing.

Claim 45 is essentially similar to claim 44 and is rejected for the reasons stated above.

(Office Action, 5/1/06, pp. 6-7)(emphasis added)

Applicant's respectfully disagree with the Office Action's assertions with respect to both the claims and the cited reference. First, it is submitted that the Office Action's statement that "[c]laim 45 is essentially similar to claim 44" is inapposite. It is submitted that although some of the language appearing in independent claims 44 and 45 is the same, independent claims 44 and 45 also contain different claim limitations and are not essentially the same.

It is also submitted that Mukherjee does not teach providing selectable DSL amplification or circuitry. In the system of Mukherjee, the DSL amplification is fixed. That is, once the system components are selected through design, they are not changeable.

Moreover, in regards to the Office Action's assertion that "it would have been obvious to a person of ordinary skill in the art to do sampling of SDL signals within the

SLTE DSL amplification circuit and processing the sampled DSL signals in order to reduce the memory requirement for processing,” it appears that the Office Action may be attempting to improperly rely on facts which are not of record to arrive at applicants’ claim limitation noted above. However, the **Examiner is respectfully requested to provide evidentiary support of such.** The Examiner’s attention is directed to MPEP 2144.03(C). Absent such submission of evidentiary support, applicants submit that the rejection of claims 44 and 45 under 35 U.S.C. §103(a) based solely on Mukherjee does not render the claims unpatentable.

Therefore, for at least the reasons provided above, it is submitted that each of claims 24 and 25 are patentable over the cited reference.

In conclusion, applicants respectfully submit that in view of the arguments and amendments set forth herein, the applicable rejections have been overcome.

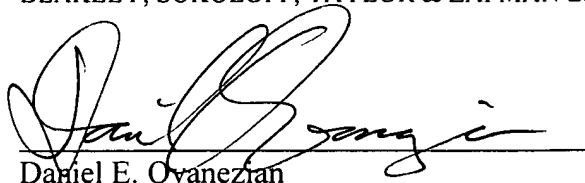
If the Examiner believes a telephone interview would expedite the prosecution of this application, the Examiner is invited to contact Daniel Ovanezian at (408) 720-8300.

If there are any additional charges, please charge our Deposit Account No. 02-2666.

Respectfully submitted,

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Dated: 8/1, 2006


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